

QM42 Series Sensors



Datasheet



- Compact, rugged, low cost self-contained sensors in metal die cast housings
- Epoxy-encapsulated circuitry; leakproof IP67 (NEMA 6) construction for harsh sensing environments
- Outstanding electrical noise immunity
- Dual LED system indicates sensor performance
- Choice of integral cable or quick disconnect connector



WARNING: Not To Be Used for Personnel Protection

Never use this device as a sensing device for personnel protection. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

To order the 9 m (30 ft) cable models, add suffix "W/30" to the model number of any cabled sensor (e.g. QM42VN6D W/30). Models with a QD connector require a mating cable.

QM42 Opposed Mode Emitter (E) and Receiver (R)			Range: 10 m (33 ft)	
Models	Cable	Output Type	Excess Gain	Beam Pattern (Effective beam: 8 mm)
QM426E Emitter	2 m (6.5 ft)	-		
QM426EQ Emitter	4-pin Euro QD			
QM42VN6R Receiver	2 m (6.5 ft)	NPN		
QM42VN6RQ Receiver	4-pin Euro QD			
QM42VP6R Receiver	2 m (6.5 ft)	PNP		
QM42VP6RQ Receiver	4-pin Euro QD			

QM42 Diffuse Mode			Range: 400 mm (16 in)	
Models	Cable	Output Type	Excess Gain	Beam Pattern ¹
QM42VN6D	2 m (6.5 ft)	NPN		
QM42VN6DQ	4-pin Euro QD			
QM42VP6D	2 m (6.5 ft)	PNP		
QM42VP6DQ	4-pin Euro QD			

¹ Performance based on 90% reflectance white test card



QM42 Polarized Retroreflective Mode			Range: 3 m (10 ft)	
Models	Cable	Output Type	Excess Gain	Beam Pattern
QM42VN6LP	2 m (6.5 ft)	NPN		
QM42VN6LPQ	4-pin Euro QD			
QM42VP6LP	2 m (6.5 ft)	PNP		
QM42VP6LPQ	4-pin Euro QD			

QM42 Plastic Fiber Optic Mode			Range: 40 mm (1.5 in)	
Models	Cable	Output Type	Excess Gain	Beam Pattern ²
QM42VN6FP	2 m (6.5 ft)	NPN		
QM42VN6FPQ	4-pin Euro QD			
QM42VP6FP	2 m (6.5 ft)	PNP		
QM42VP6FPQ	4-pin Euro QD			

² Diffuse mode performance based on 90% reflectance white test card

Wiring Diagrams

Sensors with NPN Outputs	Sensors with PNP Outputs	Key
		1 - brown 2 - white 3 - blue 4 - black

DC Emitters		
Cabled Models	Quick Disconnect Models	Key
		1 - brown 2 - white 3 - blue 4 - black

Cabled models are shown. Quick disconnect (QD) wiring diagrams are functionally identical.

Specifications

Sensing Beam

- Infrared, 880 nm for opposed and diffuse
- Visible red, 660 nm for fiber optic and retroreflective modes

Supply Voltage and Current

- 10 to 30 V dc (10% maximum ripple) at less than:
- Diffuse and retroreflective models: 20 milliamps
- Opposed mode: 30 milliamps (emitter), 10 milliamps (receiver)
- Fiber optic models: 30 milliamps

Supply Protection Circuitry

- Protected against reverse polarity and transient voltages

Output Configuration

- SPDT (complementary) solid-state dc switch; Choose NPN (current sinking) or PNP (current sourcing) models.
- Light operate: N.O. output conducts when the sensor sees its own (or the emitter's) modulated light
- Dark operate: N.C. output conducts when the sensor sees dark

Output Rating

- 100 mA maximum (each output)
- Off-state leakage current: < 5 microamps at 30 V dc
- On-state saturation voltage: < 1 V at 10 mA dc; < 1.5 V at 100 mA dc

Output Protection Circuitry

- Protected against false pulse on power-up and continuous overload or short-circuit of outputs
- Overload trip point \geq 150 mA, typical, at 20 °C

Output Response Time

- Diffuse and retroreflective modes: 1 millisecond on and off
- Opposed mode: 1 millisecond on, 0.5 millisecond off
- Fiber optic mode: 0.25 millisecond on and off

Repeatability

- Diffuse and retroreflective modes: 250 microseconds
- Opposed Mode: 120 microseconds
- Fiber optic mode: 60 microseconds

Adjustments

- All models except emitters: 15-turn slotted brass GAIN (sensitivity) adjustment potentiometer (clutched at both ends of travel)

Indicators

- Two LEDs: green and amber

- Green solid = power to sensor is on (Opposed emitters: Green power "on")
- Green flashing = output is overloaded
- Amber solid = light is sensed; normally open output on
- Amber flashing = marginal excess gain (1–1.5x) in light condition

Construction

- Housings are die-cast zinc alloy with black epoxy powder paint finish; lenses are acrylic

Environmental Rating

- IP67; NEMA 6

Connections

- 2 m (6.5 ft) or 9 m (30 ft) attached cable, or 4-pin Euro-style quick-disconnect fitting; Cables for QD models are purchased separately

Operating Conditions

- Temperature: -20 °C to +70 °C (-4 °F to +158 °F)
- Relative Humidity: 90% at +50 °C maximum relative humidity (non-condensing)

Dimensions

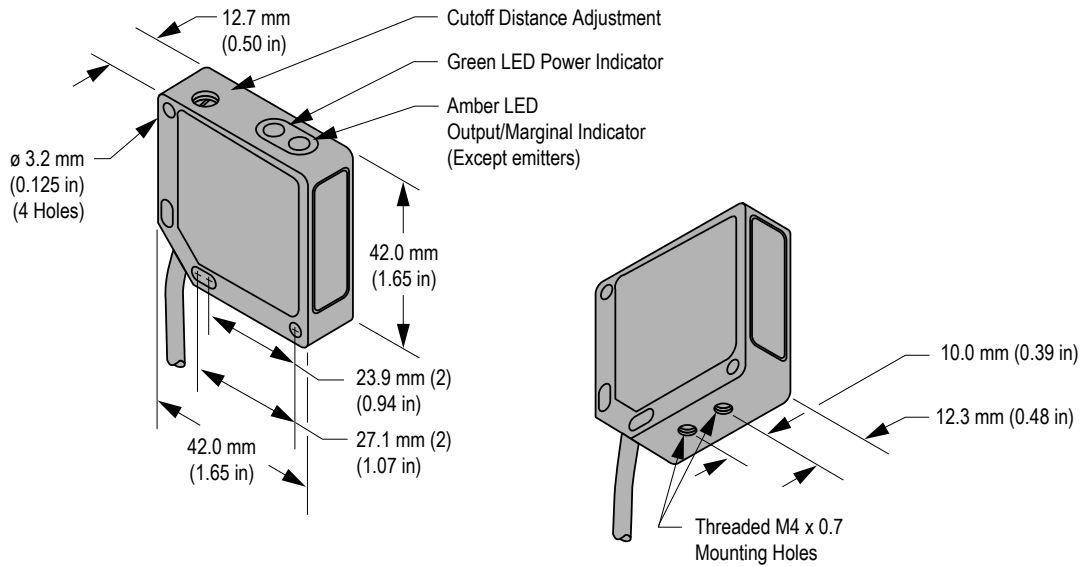


Figure 1. Cabled Diffuse, Opposed, and Retroreflective Models

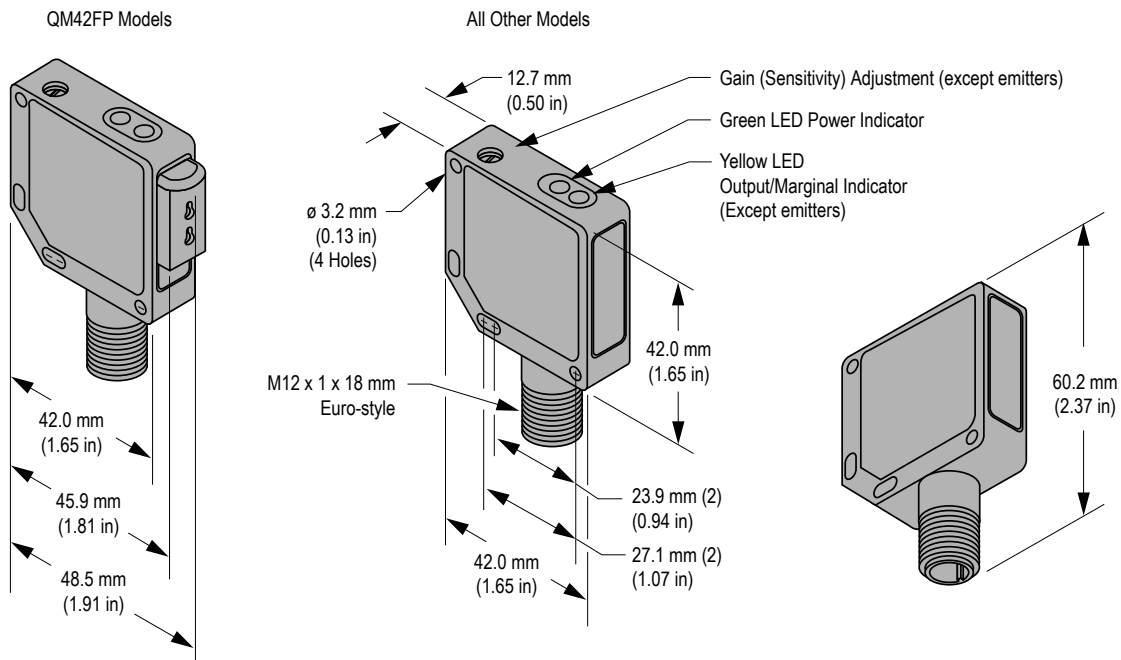


Figure 2. Quick-Disconnect Models

Accessories

Brackets	
<p>SMB19</p> <ul style="list-style-type: none"> Right-angle mounting bracket with a curved slot for versatile orientation 	

4-Pin Threaded M12/Euro-Style Cordsets				
Model	Length	Style	Dimensions	Pinout
MQDC-406	1.83 m (6 ft)	Straight		
MQDC-415	4.57 m (15 ft)			
MQDC-430	9.14 m (30 ft)			
MQDC-450	15.2 m (50 ft)			
MQDC-406RA	1.83 m (6 ft)	Right-Angle		<p>1 = Brown 2 = White 3 = Blue 4 = Black</p>
MQDC-415RA	4.57 m (15 ft)			
MQDC-430RA	9.14 m (30 ft)			
MQDC-450RA	15.2 m (50 ft)			

All measurements are listed in millimeters (inches).

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